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NOTES ON THE BIOLOGY OF ATARBA PICTICORNIS OSTEN SACKEN[1]

TIPULIDAE—DIPTERA

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Atarba picticornis O. S. is the type and sole North American species of the genus Atarba. The known range extends from New England to western Michigan and south to Louisiana and peninsular Florida. In the southern part of its range it is a common, occasionally an abundant species in mesophytic forest situations. In the north the adults appear in early summer; Alexander's New York records are for late June and July, and Michigan records are all for July. In the District of Columbia, the collection dates extend from May 16 to August 9. In southern Indiana, Tennessee and North Carolina, collection dates include May to August, with June the time of greatest abundance and average frequency and the late

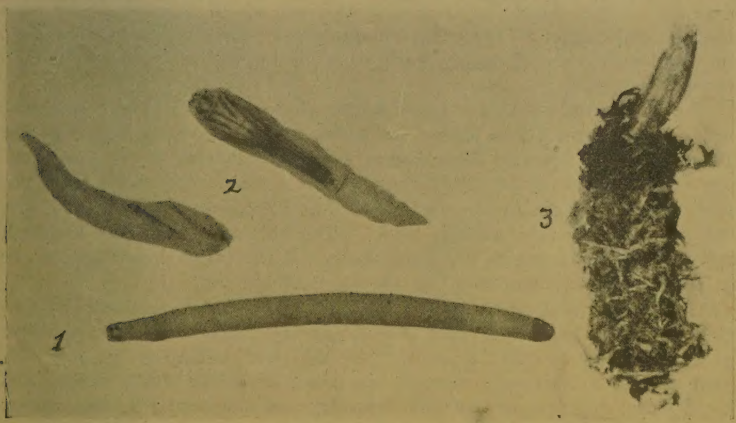

Fig. 1.—Larva, Pupae and Cocoon of *Atarba picticornis* O. S. (1) Larva, dorsal view; (2) Pupae, ventral and dorso-lateral views; (3) Cocoon with empty pupa skin projecting.

[1]Osten Sacken, R., On the North American Tipulidae, Monographs of the Diptera of North America, Part IV, Smithsonian Miscellaneous Collections. Vol. VIII. Washington, 1869.

summer records largely from deep, shaded, moist ravines. In northern Florida, adults occur from mid-February to the last of September with the greatest numbers in March and April.

For a crane-fly, this species is unusually active and alert and, altho they are often on the wing in the daytime, flying about the herbage and low shrubbery of rather open woods, twilight and night appear to be the times of greater activity. Both sexes come freely to light and have been noted as appearing at a lighted sheet from 8:00 P. M. until after midnight. Some of the light records are for pairs in copulation.

At the time of the publication of the "Crane-Flies of New York, Part II" (1921), Atarba was among the few genera of crane-flies whose immature stages remained unknown to Dr. Alexander. Since then the pupa of a New Zealand species, *Atarba viridicolor* Al. has been found and reared by Mr. T. R. Harris, and in Florida I have found and reared larvae and pupae of *Atarba picticornis*. In these two species, at least, the immature stages are spent in rotting wood. Mr. Harris notes for *A. viridicolor*, "In rotten wood, beneath bark; Karioi, N. Z.; Nov. 7, 1923" (label in vial). *A. picticornis* has been taken from logs and chunks of several species[2] of hardwoods that were in an advanced stage of decay.

All of the wood from which *Atarba picticornis* has been taken was, at the time, saturated or nearly saturated with water. In one case the log was partially submerged in a temporary stream and had been for at least two weeks. Living in the same wet wood from which this species has been taken, were sow bugs, *Passalus cornutus*, several staphylinid beetles and the larvae of the crane-flies: *Teucholabis complexa, Epiphragma solatrix*, and *Elephantomyia westwoodi*.[3] In some instances the inhabited wood was almost black, in others, it was not at all discolored nor even was bleached, but in all cases the annular rings were still discernable altho one could mold the soft pulpy wood with his hands and squeeze out considerable water.

The larvae and pupae are found within three or four millimeters of the surface of the wood. The larvae are active and move freely thru the wet fibers. As they progress their bodies separate adhering fibers that close together again when they have passed. No permanent burrows were noticed. The pupae are in all cases encased in a cocoon of short wood fibers, lined with a very thin, smooth "silk". The outside of the case is rough and uneven but the walls are quite thick and the fibers composing it are entirely free from attachment to the wood of the log.

Altho larvae and pupae have always been obtained from distinctly wet wood, some of the logs from which they were taken are known to have been much drier at other seasons. The log mentioned above as partially submerged in a temporary stream, was much drier six weeks earlier and the temporary stream at that time was dry and had been for some weeks. Several weeks after the larvae were taken the log was examined and found

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[2]Identification unsure because of advanced decay. Fairly sure identifications include Magnolia, sweet gum, black gum.

[3]Possibly *Elephantomyia longirostris* Williston, altho the identification given above is believed to be correct. *E. longirostris* was described from S. Vincent.

quite dry at the surface and only slightly damp at two inches beneath the surface. The temporary stream was again quite dry.

Neither larvae or pupa have ever been found to be abundant; samples of wood that yielded scores of *Epiphragma solatrix* larvae and dozens of *Teucholabis complexa* larvae would, at most, contain but three or four larvae of *Atarba pecticornis* and even fewer pupae. When one considers that numerous samples of wood containing a few immature stages was examined at various seasons, and that the adults are often very common, it seems probable that the females deposit but a few eggs in one place.

The duration of the pupa stage is close to seven or eight days in Florida in the early spring. Later in the summer it may be a day shorter. The growth of the larvae is rather slow. A typical rearing jar record is as follows: "Feb. 16, 1924, five apparently full grown larvae taken from rotten wood today; 2 killed and preserved, 3 placed in a vial with sterilized rotten wood from habitat. March 8, 1924, a male *A. picticornis* emerged; March 9, 1924, a second male *A. picticornis* out today. March 28, 1924, remaining larvae examined today—still active. April 29, 1924, larva examined today—still a larva but encased in 'cocoon' and inactive. May 8, 1924, a female died emerging today." From other rearing notes it is evident that the cocoon is builded by the larva but a day or two previous to pupation. The larva skin and head capsule may always be found at the posterior end of the cocoon, usually wadded into a flat pellet entirely caudad to the

Fig. 2.—Details of Larva and Pupa. (4) Left mandible of larva, mesal view; (5) Right mandible of larva, dorsal view; (6) Mentum of larva; (7) Face of pupa.

pupa; occasionally the last two or three abdominal segments of the pupa are still enclosed in the loose pupa skin.

DESCRIPTIONS OF THE IMMATURE STAGES

THE LARVA (Figs. 1, 4, 5 and 6)

Form terete, moderately elongate. Length, 11-13 mm.; diameter of 1st thoracic segment, 0.7-0.8 mm.; diameter of 3rd abdominal segment, 1-1.3 mm.; diameter of base of 9th abdominal segment, 0.5-0.6 mm. (Measurements made fram expanded, preserved larvae). In life, the 8th abdominal segment is often markedly dilated. Color, in life, a pale yellowish white, deepening to a pale orange yellow in the anterior segments. Integument thin, translucent, colorless, with a scant pale, wholly microscopic pubescence. Creeping welts extensive but with a very low relief, so that they are not apparent without considerable magnification. Each welt composed of numerous (8-20) close-set, parallel rows of minute brownish hairs; the rows extending across the width of the tergites and sternites but absent from the pleural region; about 15 such parallel rows to 0.1 mm. The first pair (dorsal and ventral) of these welts is situated on the caudal end of the third thoracic segment; abdominal segments 1-7 have a pair on both cephalic and caudal ends; abdominal segment 8 has a pair on its cephalic end. On the central abdominal segments the welts occupy the cephalic and caudal thirds of the segment.

The spiracular disk is small and very oblique, as nearly horizontal (dorsal) in position as vertical. It has five small lobes, of which the ventral pair are distinctly largest. Ventral lobes nearly parallel, their outer margins in line with the lateral edges of the disk, their inner margins short, fused to more than mid-length; each is marked by a linear, dark brown spot that extends from near the distal end to the base, or even onto the face of the disk. Just caudad of this linear spot, each lobe bears a short, stout, curved seta, directed dorsad. Dorso-lateral lobes markedly dorsal in position, but slightly larger than the vestigial dorso-median lobe. All three dorsal lobes infuscated with a narrow crescent, parallel to and just before their apical margins. The margins with a thin growth of short, slender, brownish hairs. Spiracles situated just below the bases of the dorso-lateral lobes, circular in outline, small, separated by about three times the diameter of one spiracle; the centers jet black, the rings yellowish orange. Caudo-ventrad to the spiracular disk are the anal gills; these form an un-lobed, wart-like protuberance beneath the extreme caudal end of the body. In life, they are translucent, colorless; after death, an opaque white.

The head capsule is compact, dark brown, massive. Prefrons extensive, triangular in outline, chitinized; its cephalo-lateral angles fused with the lateral plates, its acute caudal angle slightly incised. Lateral plates extensive, deep, shaped like the valves of a mussel; above, they are fused with the prefrons anteriorly and but slightly separated from the prefrons for its entire length; below, the edges of the lateral plates turn mesad and are separated by less than a third of the floor of the head capsule posteriorly, and meet, or nearly so, anteriorly, where they articulate with the bars of the mentum. Antennae slender, elongate, cylindrical; first joint very long, length five times the diameter, cylindrical but tapering slightly

toward the apex; second joint small, about as long as the diameter of the first joint, rounded-conical. The labrum-epipharynx separated from the prefrons by a broad, crescent-shaped membrane whose cephalic (concave) margin bears a narrow, crescent-shaped plate, the clypeus (?). Labrum-epipharynx gently convex along its caudal margin, more rounded at the cephalic margin; cephalic margin well chitinized, with a narrow, shallow emargination in the middle; surface with a thick growth of short hairs, a single seta at either caudo-lateral angle and group of three, small, separate setae toward either cephalo-lateral angle. Mandibles strongly chitinized, rather massive, strong; apical halves spoon-shaped, the cavities ventro-mesal; dorsal margin with two blunt, conical teeth; apical tooth long, flattened, directed ventro-cephalad; three ventral teeth, similar to apical tooth but smaller; prosthecal region with a distinct lobe, bearing a heavy, blunt tooth on its dorsal surface. Length of mandible, 0.16 mm.; width at base, 0.05 mm.; width at prosthecal lobe, 0.07 mm.; length of apical tooth, 0.28 mm. Maxillae membranous, short, faintly two-lobed; surface with a thick growth of pale, moderately long hairs; a small circle of minute setae on the ventro-lateral margin of the outer lobes near their bases; tips of the maxillae extend scarcely cephalad of the anterior margin of the labrum-epipharynx. Mentum large, prominent; apical tooth long, narrow triangular; on either side three progressively smaller and more caudad teeth; caudal cleft narrow but extending to midlength of median tooth; mental bars short, broad. Hypopharynx rather delicate, supported on either side by two strong chitinous rods; two rows of anteriorly directed teeth are discernable, the narrower row with four rather blunt teeth, the wider with ten or twelve, sub-equal, narrow, longer teeth, the lateral two or three, shorter and more acute.

In spite of the many distinct differences, particularly in the head capsule, the living larvae are peculiarly like the living larvae of *Teucholabis complexa* in general appearance.

THE PUPA (Figs. 2 and 7)

Length, 6.5-7.5 mm.; breadth (dextro-sinistral) at base of wing pad, 1.3 mm.; depth (dorso-ventral) at base of wing pad, 1.3 mm. Color, in life, very pale, whitish tinged with yellow; eyes terra cotta; sheaths of tarsi, apical margins of the wing pads, pronotal breathing horns, cinnamon rufus; in older pupae the bicolorous antennal joints show thru the transparent antennal sheath. Younger pupae uncolored except for the eyes. Integument very delicate, thin; heaviest chitinization in the tarsal sheaths. The sheaths of the tarsi, antennae and wings adhere very slightly to the surface of the pupae case, are easily displaced by gentle currents of fluid.

Head small, rounded conical; projecting cephalad of the thorax. Cephalic crest represented by two small, widely separated, somewhat conical tubercles. These tubercles are slightly chitinized, their apices directed slightly laterad and bearing a single long stout seta; two similar setae are borne from the mesal face of each tubercle. In ventral view the tubercles are concealed by the bases of the antennae altho the setae are visible projecting cephalad. The antennae arise from basal enlargements that are rather closely approximated; extend to beyond the basal fourth of the wing pad; are without angulations beyond the basal enlargements. Eyes widely separated, their lateral margins very rounded. Cheeks markedly

rounded, without projecting angles. Labrum longer than broad; the width is abruptly expanded at a little less than mid-length so that the apical half is broader than the basal; apex rounded. Labial lobes rounded-elliptical; their lower inner margins meeting in a broad curve below the labrum. Maxillary palpi moderately long, broad at the base, acute at the apex; curving along the margin of the cheeks to a point well cephalad of the knees of the prothoracic legs.

Prothorax rather long in the mid-dorsal line, curving over the caudal part of the head, pale, very little chitinized. Pronotal breathing horns small, length, 0.15 mm., clavate, cylindrical, curved cephalo-laterad; the expanded distal ends are somewhat darker than the basal portion. The horns are separated by more than two thirds the width of the dorsum of the prothorax. Mesothoracic dorsum smooth, gently rounding. Dorsum of metathorax depressed. Wing pads extend to cephalic margin of second abdominal segment. Tips of the tarsal sheaths ending opposite the fifth abdominal segment, the three pairs of slightly, but distinctly, unequal length: prothoracic pair the longest, extending to beyond mid-length of fifth adominal segment, mesothoracic pair the shortest, ending at anterior margin of the segment, metathoracic pair intermediate.

Abdomen pale, unchitinized, glabrous save for the caudo-ventral margin of the fifth abdominal segment where a number of close-set, parallel rows of minute points form a narrow, transverse band. Segments 2-7 are divided into a basal and posterior annulus, the latter somewhat the longer, the former again divided dorsally into two narrow folds. Lateral spiracles are present on segments 2-7 and on the dorsum of segment 8 are a pair of narrow, brown ringed depressions that are believed to be dorsal spiracles. Female cauda pointed; dorsal lobes the longer, their apices acute, chitinized, slightly upturned; ventral lobes straight, blunt.

THE COCOON (Fig. 3)

The cocoon, in which the pupa is enclosed, is composed of wood fibers (xylem), save for the very thin, smooth lining of a silk-like substance. The pupa is tightly enclosed save for a slight space at the caudal end. The outside measurements of a typical cocoon are: length, 11 mm.; diameter of cephalic end 3.5 mm.; of caudal end 3 mm. The size is fairly uniform but the color of various cocoons ranges from almost black to almost white, depending upon the color of the wood inhabited by the pupa. The cocoons of "black-rotten" wood are more fragile and more liable to crumble than those of lighter colored woods. The one figured is a dry cocoon gummed to a point and pinned with the male that emerged from it.

RELATIONSHIPS INDICATED BY THE IMMATURE STAGES

The genus Atarba was placed by Osten Sacken in his "section" (tribe of Alexander) Limnobia anomala. This group was later known as the Antochini by van der Wulp, and Rhamphidini by Verrall. In this tribe Osten Sacken included some thirteen or fourteen genera including Atarba, Antocha, Dicranoptycha, Rhamphidia, Teucholabis, Elephantomyia. He recognized and declared the artificial nature of this grouping and for this reason maintained the term Limnobia anomala rather than Antochini or

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Rhamphidini.[4] Lately Alexander[5] has entirely abandoned the recognition of this tribe, removing the various genera to more natural groupings as the evidences of natural relationships have been discovered. Most of the genera have been found to have relationships with the tribe Limonini: Dicranoptycha, Rhamphidia, Antocha, Diotrepha; others have been placed in the Eriopterini: Teucholabis, Elephantomyia.

On the basis of larva and pupa characters, Atarba very clearly is among the genera whose relationships are with the Limonini. The massive structure of the head capsule, with its extensive and intact prefrons and lateral plates; the mentum with a caudally cleft but anteriorly intact, prominent median tooth and smaller lateral teeth; the structure of the hypopharynx and form of the mandibles, all are clearly Limonine in character. Other larva characters are also of a Limonini type. In the pupa the majority of the characters: form of mesonotum, sheaths of mouth parts, lack of chitinized crests, abdominal spiracles, are Limonine. The only possible Eriopterine character, the unequal length of the tarsal sheaths, is approached by the pupae of several genera of the tribe Limonini.

The characters of the adult are, I believe, also indicative of the Limonini as the tribe is now defined.

In the Limonini, Atarba stands closest to the Dicranoptycha, altho it would not fit into the sub-tribe Dicranoptycharia as now defined.

Thru the kindness of Mr. Harris of New Zealand and of Dr. Alexander, who forwarded it to me, I have the empty pupa skin of *Atarba viridicolor* Al. This is so close in all characters to the pupa of *Atarba picticornis* that separation would probably be difficult if both flies occupied the same region. The main differences are a slightly longer pair of tergal valves in the female cauda of *A. viridicolor* and the fact that in this species the bands of minute points are found on the caudo-ventral margin of several abdominal segments, the points even more minute than in *A. picticornis*.

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[4]Osten Sacken, R. See note 1, also Studies on Tipulidae, Part II, Review of the Published Genera of the Tipulidae brevipalpi, Berl. Entom. Zeitsch., 1887.

[5]Alexander, C. P., Crane-Flies of New York, Part II, Ithaca, N. Y., 1921 and Biology of N. A. Crane-Flies, Part V, The Genus Dicranoptycha Osten Sacken, Pomona College Journ. Ent. and Zool., XI, Dec. 1919.

PERSONALS

Mr. F. S. Chamberlain is senior author (with J. N. Tenhet) of an article in the Journal of Agricultural Research, July 1926, on "*Cardiochiles nigriceps* Vier. An Important Parasite of the Tobacco Bud Worm, *Heliothis virescens* Fab." The work was carried on at Quincy, Fla., where Mr. Chamberlain has charge of the laboratory of the U. S. Bureau of Entomology for the investigation of the insects attacking tobacco.

Dr. E. W. Berger has been called to Ohio by the death of his brother.

Among our members who are planning to attend the meetings of the American Association for the Advancement of Science in Philadelphia are G. B. Merrill, Edgar Grossman, A. F. Camp, J. C. Goodwin, O. F. Burger, J. R. Watson, J. H. Montgomery, S. R. Warner, Wilmon Newell, E. D. Ball.

Prof. John Gray is spending the Christmas holidays in Cuba.

THE IDENTITY OF THE NEW CITRUS APHID

A. N. TISSOT

Since its appearance in the spring of 1924 the identity of the citrus aphid has been in question. In Bulletin 174 of the Florida Agricultural Experiment Station by J. R. Watson and A. H. Beyer, this aphid was called *Aphis spiraecola* Patch, but a footnote mentioned that it was very closely related to *Aphis pomi* De Geer, and might be identical with this species. In Bulletin 313 of the Maine Agricultural Experiment Station Dr. Patch considered the two species identical, but some other entomologists hold that there are two distinct species.

In an attempt to throw light on the question some transfer tests were made by the writer during the past summer and fall and the results of some of these experiments follow:

There were a few colonies of aphids on apple on the Station grounds but since there was a possibility that they had migrated from citrus it was thought advisable to secure some aphids from some outside source. On September 15th a shipment of aphids on some apple shoots was received thru the courtesy of Mr. F. F. Smith who collected them in the vicinity of Willow Grove, Pennsylvania.

Three lots of these aphids of about ten individuals each were placed on growing shoots of apple. The aphids at once began to feed and reproduce and soon there was a large colony on each shoot. Two of these shoots still have a few individuals alive at the present time, Dec. 20th, and on each of them eggs were laid.

Five groups of aphids from the Pennsylvania shipment, averaging about eight individuals each, were placed on tender shoots of citrus of the Cleopatra variety. Two of these groups disappeared in two or three days but some of the aphids in the others fed on the citrus and produced a few young. The colonies grew smaller however and disappeared completely in two to three weeks.

Twenty-six of the young which were produced by these three colonies were transferred to other shoots of citrus. Only two of these twenty-six reached maturity and produced young. One of these females produced thirty-six young in ten days. Twelve of these young were transferred to other shoots. Some apparently did not feed at all while others fed for a time but none reached maturity. The other female produced a total of twenty-nine young in ten days. Nine of these young were transferred, and here again some of them fed for a time but none reached maturity.

While a sufficient number of transfers have not been made to give conclusive evidence, still the fact that two individuals of the forty-seven which were transferred reached maturity and produced young would seem to indicate at least that under favorable conditions a physiological race of aphids could develop on apple or spirea which would be able to live and reproduce on citrus.

LIFE HISTORY OF IMPORTANT LADY-BEETLE PREDATORS OF THE CITRUS APHID

W. L. THOMPSON

(Continued from Vol. 10, No. 3, p. 46)

The length of the larval instars differs according to the time of year and temperature. From July to the last of September the larval period lasted from ten to fourteen days; the average daily temperature ranging from 73° F. to 89° F. In November and December the larval period was from thirteen to thirty-seven days, the daily average temperature ranging from 59° F. to 72°F. See Table IV for details.

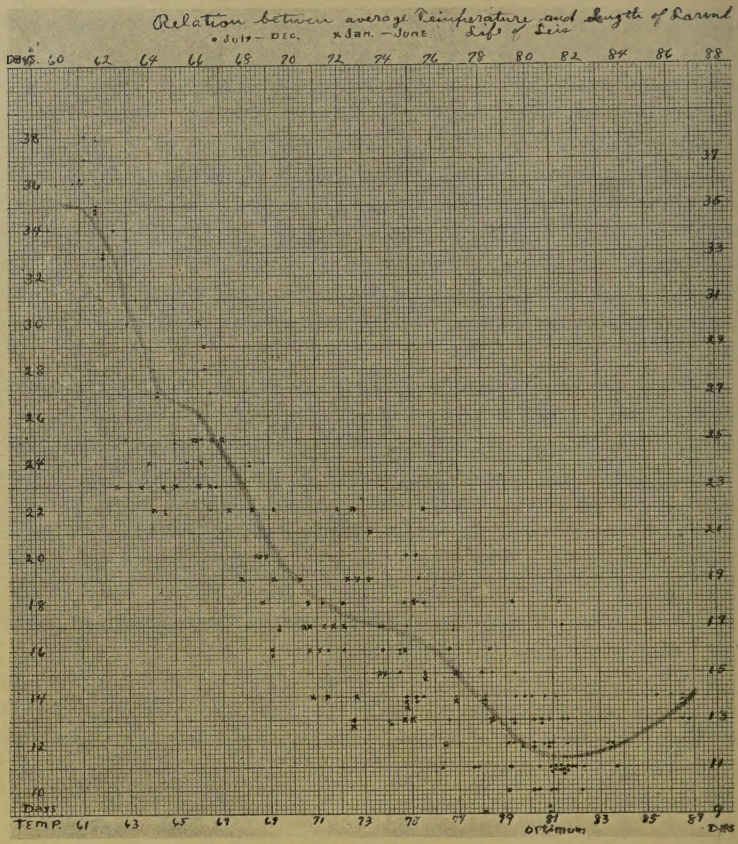

Fig. 3.—Relation between average temperature and length of larval life.

When the larvae pupate they attach themselves by the tips of their abdomens, head down, to a mature leaf; if caged, to the side of the cage. When changing from larva to the pupa stage the skin splits over the head and down the back. To remove the skin the larva has the power to move the body up and down, throwing the skin back to the attached part of the body.

Pupae.—After the skin has been cast off the pupa is a bright yellow but in a short time it deepens to an orange color with two black spots on the thorax, one on each wing pad and six on the abdomen. The length of the pupa is from 6 to 7 mm.

The length of the pupa stage is from 5 to 7 days in warm weather but this period increased in cool weather from ten to fifteen days. See Fig. 3.

A NEW LIOTHRIPS FROM SANTO DOMINGO

J. R. WATSON

(Liothrips seini n. sp.)

Light brown to dark chestnut brown in color; only tarsi, most of fore tibiae, and intermediate antennal segments much lighter. In lighter specimens the thorax especially shows much hypodermal pigment. All bristles weak, short and inconspicuous, light yellowish brown, Head but little longer than broad. Cheeks nearly straight, slightly diverging posteriorly. Dorsum finely striated. Eyes very long, much wider at posterior end than at anterior which is prolonged inwardly at the anterior angle. Ocelli large, the anterior reaching nearly across the interocular area; situated far forward, the posterior in front of the middle of the eyes; bordered with reddish brown crescents. Mouth cone reaching to about the middle of the prosternum, tipped with black. Antennae a little more than 1.5 times as long as head. Segments 1 and 2 concolorous with the head, 3-5 yellow, shaded with brown, 4 and 5, especially 5, considerably so, 3 scarcely at all, 6-8 light brown, 6 yellowish in basal half. Segment 1 very broad, especially at base; 2, barrel-shaped, but contracted slightly at base, curved outwardly; 3-5 clavate; 3 with narrow pedicel, 4 and 5 with wider ones; 6 and 7 oblong, abruptly narrower than 5; 8 conical but conspicuously bent outward.

Prothorax rather small, rounded, a moderately long bristle on posterior angle; nearly twice as wide (including coxae) as long.

Mesothorax much wider. Metathorax with nearly straight sides converging posteriorly. Legs rather slender, femora and middle and hind tibiae concolorous with body. Distal half of fore tibiae, tips of others and all tarsi brownish yellow.

Wings rather short, membrane often reaching only to segment 5 of abdomen; in others to segment 8; color of fore pair pale brownish yellow, veins and margins darker, a colorless area on the scale and another in the anterior half of the basal third. Fringing hairs moderately long, about eleven interlocated ones.

Abdomen no wider than mesothorax, varying much in length. In some individuals no longer than the head and thorax, in others much longer. Tube only about 2/3 as long as the head. Terminal bristles scarcely as long as the tube.

Measurements: Head, length 0.30 mm.; width 0.25; prothorax length 0.20 mm.; width 0.39 mm.; mesothorax, width 0.46 mm.; abdomen width 0.48 mm.; tube. length 0.19 mm.; width at base 0.11 mm.; at apex 0.06 mm. Total body length 2.4 mm. (1.7 to 2.8 mm.). Antennae, total length 0.47 mm. Segment 1, 42; 2, 57; 3, 80; 4, 65; 5, 71; 6, 65; 7, 63; 8, 44 microns.

Male.—Similar to female but averaging smaller.

Measurements: Head, length 0.24 mm., width 0.26; prothorax, length 0.21 mm., width 0.41 mm.; mesothorax, width 0.47 mm.; abdomen, width 0.47 mm.; tube, length 0.19 mm.; width at base 0.09 mm., at apex, 0.05. Total body length 2.0 mm. (1.4 to 2.3 mm.). Antennae, total length 0.40. Segment 1, 39; 2, 51; 3, 72; 4, 56; 5, 62; 6, 57; 7, 57; 8, 40 microns.

Described from three females and four males collected by Mr. Francisco Sein from an unknown shrub at Cerro el Casique Santo Domingo, Dec. 12, 1924. Forwarded by Dr. H. L. Dozier.

NEW THYSANOPTERA FROM FLORIDA

J. R. WATSON

Merothrips floridensis sp. nov.—Female *(apterous)*

General color yellowish brown, head and prothorax Dresden brown (Ridgeway's Color Standards), abdomen and pterothorax a little lighter, legs a brownish yellow.

Head a little longer than wide, widest a little above the base from which points the cheeks are arched sharply to the base and gently to the eyes; smooth; post-antennal bristles nearly as long as the first three antennal segments. A pair of bristles situated midway between the eyes and the posterior border of the head are quite conspicuous tho less than half as long as the post-antennals; mediad of these is a pair of small bristles; and a fourth pair, equally small, lies between the eyes. *Eyes* very small, showing only three facets in lateral profile, pilose, ocelli lacking. Mouth cone about 5/6 as long as wide, reaching about half way across the prosternum, semi-circularly rounded at the apex. Antennae 2.5 times as long as the head. Segment 1 concolorous with the head, 2 a trifle lighter, 3-8 mummy brown (Ridgeway's Color Standards), about a third of 1 covered by the vertex, 2 cup-shaped; 3 and 4 oblong-elliptical in outline; 5 small, ovoid; 6 and 7, ovoid-elliptical; 8, elliptical; 3 and 4 with the tympanum-like oval sense areas typical of the genus. Bristles and sense-cones pale and inconspicuous.

Prothorax large, trapezoidal in outline, longer than the head and wider than long. Sides nearly straight and diverging sharply from the anterior border which is no wider than the head. Anterior angles with a weak bristle and the rounded posterior angles with a long bristle, a shorter one on each coxa. Mesothorax with sides diverging sharply to a sharp angle from which they narrow again to the straight and parallel sided metathorax; a pair of long, sharp-pointed bristles posterior to the anterior angles and another posterior to the lateral angles. Legs short and thick, the fore-femora greatly enlarged and the hind femora less so. Fore tibia armed at the tip with a plainly evident but small spine. *Wings lacking.*

Abdomen rather heavy, broadening regularly to about segment 7 and then abruptly rounded to the tip, ovipositor rudimentary.

Measurements: Total body length 0.66 mm. Head, length, 0.096 mm., width 0.09 mm.; prothorax, length 0.106 mm., width (including coxae) 0.14 mm.; mesothorax, width 0.15 mm.; metathorax, width 0.136 mm.; abdomen, greatest width 0.16 mm., antennae;—total length 0.25 mm.

Segment	1	2	3	4	5	6	7	8	
Length	23	27	40	38	30	33	35	45	
Width	27	25	18	16	14	15	13	10	microns

Male very similar to the female, but the fore femora are provided with a stout tooth just below the middle of the inside margin and the tooth on the fore tibia very much larger than in the female. When the leg is flexed these two teeth come into opposition.

Described from a single female and a single male taken in moss growing on the trunk of a live-oak tree at Earleton, Fla., Sept. 4, 1926. Types in the author's collection.

This species resembles the type species of the genus *(morgani)* in the small eyes, absence of wings, etc., but differs in the shape of the head and antennal segments and in the presence of the tooth near the apex of the fore tibia in the female.

The following key will enable one to separate the four species of the genus:

a. No tooth on the fore tibiae ..... *morgani* Hood
aa. Fore tibiae provided with a tooth near the apex.
b. Head 1.25 times as long as wide ..... *williamsi* Priesner
bb. Head about as long as wide, wings and ocelli absent —*floridanus* sp. nov.
bbb. Head 1.5 times wider than long, wings and ocelili present ..... *fusciceps* Hood

POLYPOROTHRIPS GEN. NOV.

Head considerably longer than wide and longer than the prothorax; cheeks parallel, vertex elevated, gently rounded in front, slightly overhanging the bases of the antennae. Antennae, about 1.5 times as long as the head; 8 segmented; the basal segments unusually stout, inserted close together and directed nearly straight forward, segments 2-8 pedicellate, 3-8 narrowly so, and of nearly uniform length, with long slender bristles.

Mouth cone long, reaching the mesosternum, pointed at tip.

Prothorax much shorter than the head, armed with five pairs of long capitate bristles.

Abdomen almost conical in shape, widest at base and evenly rounded to the tube. Tube with straight sides.

Close to *Neothrips* Hood but can be told at a glance by the narrow pedicellate 8th antennal segment (7 and 8 closely united in *Neothrips)*. It differs also in the heavier basal segments of the antennae, which are inserted closer together and directed more nearly forward. The head is shorter and vertex rounded. The prothorax is much shorter. It differs also in the shape of the abodmen (which is almost cylindrical in *Neothrips* and in the straight sides of the tube. Type *Polyporothrips longipilosus* sp. nov.

Polyporothrips longipilosus sp. nov. Apterous female

General color, baryta yellow (Ridgeway's Color Standards, 1912). Prothorax, sides of pterothorax and abdomen shaded with brown. Hypodermal pigment orange red by reflected light. Antennal segments 4-8 dark mouse gray.

Head 1.3 times longer than wide; cheeks, straight and parallel but abruptly rounded to the eyes, provided with a few pale short bristles; vertex elevated, rounded, covering about a third of the basal antennal segments. Dorsal surface with a few faint striations at the sides. Post ocular bristles large, a row of three small bristles behind each postocular, two others lateral to these and three mediad. Ocellar bristles present but small. Eyes very small, only two large facets in lateral outline. Pigment, dark red. Ocelli wanting, but a speck of dark red pigment at the vertex between the bases of the antennae probably represents the anterior ocellus. Antennae nearly twice as long as the head, segments 1, 2 and base of 3 concolorous with the head or darker, apex of 3 and 4-8 dark mouse gray. Segment 1 very large and heavy, 2 cup-shaped, with a wide pedicel; 3 short club-shaped; 4-7, oblong ovoid. Bristles long and slender, progressively so from base to apex; one on the inner side of segment 7 1.5 times as long as the segment, a pair at the base nearly as long. Sense cones on segments 3-6 heavy, curved, colorless.

(To be continued)

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